

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

CLOSURE OF WASTE IMPOUNDMENTS
(No.)

Code 360

DEFINITION

The safe closure of waste impoundments (animal waste lagoons and waste storage ponds) in an environmentally safe manner.

PURPOSE

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- To protect the quality of surface water and groundwater resources.
- To eliminate a safety hazard for humans and livestock
- To safeguard public health

CONDITIONS WHERE PRACTICE APPLIES

This standard applies to agricultural waste treatment lagoons and waste storage ponds that are no longer needed as part of a waste management system and are to be permanently closed or converted.

Where these impoundments are to be converted to fresh water storage and the original impoundment was not constructed to NRCS standards, this practice will only apply where the investigation, as called for in National Engineering Manual (NEM) 501.23, shows structural integrity.

CRITERIA

General criteria applicable to all purposes

All planned work shall comply with all Federal, state, and local laws and regulations.

All structures used to convey waste to lagoons or waste storage ponds shall be replaced with

compacted earth material or otherwise rendered unable to convey waste.

Liquid and slurry wastes shall be agitated and removed to the fullest extent practical, using conventional pumping, dredging, or excavating equipment. Clean water shall be added as necessary to facilitate the agitation and pumping. The wastewater shall be utilized in accordance with NRCS conservation practice standard, Waste Utilization, Code 633 and/or Nutrient Management, Code 590. A small amount of sludge may remain on the bottom and sides of the waste treatment lagoons or waste storage ponds if it will not pose a threat to the environment. When a waste treatment lagoon or waste storage impoundment Kentucky Pollutant Discharge Elimination System (KPDES) permit, or Kentucky No Discharge Operational Permit (KNDOP) is terminated, any waste in place at the time is subject to regulation as a solid waste. Unless the sludge has been removed to the fullest extent practical using conventional practices, the closed impoundment may be considered an unpermitted waste disposal facility, subjecting the owner or operator to possible fines.

Land Reclamation. Impoundments with embankments may be breached so that they will no longer impound water and excavated impoundments may be backfilled so that these areas may be reclaimed for other uses. Waste impoundments that have water impounded against the embankment are considered embankment structures if the depth of water is three feet or more above natural ground.

(1) **Embankment Impoundments.** Waste shall be removed from the site before the embankment is breached. The slopes and bottom of the breach shall be stable for the soil material involved, however the side slopes shall be no steeper than three horizontal to one vertical (3:1).

(2) Excavated Impoundments. Excavated impoundments are to be backfilled with earth materials. The backfill height shall exceed the design finished grade by 5 percent to allow for settlement. The bottom liner of the impoundment should be disrupted or removed with dredging or excavating equipment so that the impoundment does not continue to hold water after being backfilled, creating a poorly drained area unable to support equipment or good vegetative growth. The finished surface shall be constructed of the most clayey material available and mounded to shed rainfall runoff. Incorporate available topsoil where feasible to aid establishment of vegetation.

Conversion to Fresh Water Storage. The converted impoundment shall meet the requirements of the appropriate NRCS conservation practice standard for the intended purpose (e.g. Pond, Code 378; or Irrigation Storage Reservoir, Code 436). This will require an investigation of the structural integrity of the impoundment if not originally constructed with NRCS technical assistance.

Safety. If sludge is not removed from an embankment or excavated pond, the KPDES or KNDOP permit must be maintained, and precautions (fencing and warning signs) will be used to ensure that the pond is not used for incompatible purposes (such as swimming, livestock watering, fish production, etc.) until water quality is adequate for these purpose. Water quality sampling and analysis shall be used to determine when the pond is safe for these uses, and the KPDES or KNDOP permit may be terminated.

Protection. All disturbed areas not returned to crop production shall be vegetated in accordance with NRCS conservation practice standard Critical Area Planting, Code 342.

Measures shall be taken during construction to minimize site erosion and pollution of downstream water resources. This may include details and specifications for such items as silt fences, hay bale barriers, temporary vegetation, and mulching.

CONSIDERATIONS

Reduce pumping effort to empty waste impoundments where the surface is covered by a dense mat of floating vegetation by first applying herbicide to the vegetation and then burning the residue. Appropriate permits must be obtained before burning.

Sludge from lagoons and holding ponds can be difficult to remove by agitation and pumping. Excavating equipment may be required to remove excessive soil and other debris.

When converting waste treatment lagoons and waste storage ponds to fresh water ponds, the effects on the water budget should be considered. A pond will reduce surface runoff, trap sediment, and reduce nutrients and pesticides leaving the land.

Consideration of climate factors such as humidity, wind speed, and wind direction should be considered to determine the timing and method of applying the wastewater sludge from the lagoon or waste storage pond.

If livestock will have access to the closed waste impoundment, consideration should be given to fencing or installation of watering ramp where needed for safety when converted to fresh water ponds.

If the closed or abandoned waste treatment pond is to be filled with fresh water and used for fish production, consideration should be given to the removal of sludge since it will be a source of biological oxygen demand (BOD).

Minimize the impact of odors associated with emptying and land applying wastewater and sludge from a waste impoundment by using an incorporation application method at a time when the humidity is low, when winds are calm, and when wind direction is away from populated areas.

Sludge, which is allowed to dry, will begin to break down aerobically. This will result in a release of nutrients from the sludge, which can last for years depending on the depth of the sludge. For this reason, sludge, which is left in place, should be kept flooded to prevent this from occurring or other measures taken to prevent this release of nutrients from becoming a source of surface or ground water contamination.

Maintain a minimum depth of 6 inches of water above the waste left in place. This will reduce the chance of occasional exposure in dry or windy weather leading to odor releases and disease vector attraction.

PLANS AND SPECIFICATIONS

Plans and specifications for closure of abandoned waste treatment lagoons and waste storage ponds shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. If the waste treatment lagoon or waste storage pond is converted to a fresh water pond, the pond shall be required to meet the NRCS conservation practice for the intended purpose. The plans and specifications shall also be in keeping with the requirements of that standard.

OPERATION AND MAINTENANCE

The proper closure of a waste treatment lagoon or waste storage pond should require little or no operation and maintenance; however, if it is converted to another use, such as a fresh water pond, operation and maintenance shall be in accordance with the needs as set forth in NRCS conservation practice standard for the intended purpose.

REFERENCES

NRCS Conservation Practice Standards:
Critical Area Planting, Code 342
Irrigation Storage Reservoir, Code 436
Nutrient Management, Code 590
Pond, Code 378
Waste Utilization, Code 633

**CONSTRUCTION SPECIFICATION
INTERIM STANDARD****CLOSURE OF WASTE IMPOUNDMENTS****CODE 360****SCOPE**

This item shall consist of the measures necessary to close out a waste impoundment that is no longer in service. Construction operations are to be carried out in such a manner that erosion, air, water, and noise pollution will be minimized and held within legal limits established by State regulations.

Dredging

Sludge that is removed with a dragline or other similar equipment is to be temporarily stockpiled near the waste impoundment. If at all possible, the stockpile area shall slope slightly toward the waste impoundment. A drainage fence or filtering device may be necessary to prevent solids from reentering the waste impoundment. In topographical locations in which positive drainage toward the waste impoundment cannot be obtained, a sump pump system may be required to return the liquid drainage back to the waste impoundment. If the sludge has minimum drainage associated with the dredged material, a grass filter can be designed to treat the liquid in lieu of the sump pump system.

If the existing soils at the stockpile location are not adequate to prevent seepage from entering the groundwater, a 6-inch, compacted clay pad is required beneath the stockpile. The perimeter of the stockpiled material shall be protected as needed with an earthen berm or other approved structure to ensure drainage of the dredged material returns to either the waste impoundment, a sump pump, or an appropriate grass filter.

The dredged material should be allowed to dry, tested for nutrient content, and then land applied at

recommended rates. After land application of the dried material, the temporary stockpile area shall be smoothed and vegetated according to the vegetation plan. Uncontaminated runoff water from the area shall be diverted away from the waste impoundment. If the stockpile area is planned for future use, the improvements can be maintained by diverting runoff water from the waste impoundment and vegetating to prevent erosion of the area.

WASTE IMPOUNDMENT CLOSURE

Agitate and pump out the waste impoundment contents as noted in the guidelines of the standard and as outlined in the Conservation Plan. Remove the unpumpable material in the bottom of the waste impoundment according to the closure plan.

If the waste impoundment is to be closed by filling with soil, the soil shall be placed in maximum 12-inch lifts with each layer being compacted using two passes of heavy equipment. Soil moisture content shall be maintained to ensure adequate compaction of the material. The filling process shall continue until the waste impoundment is overfilled 5 percent to allow for settlement. The final finished surface shall have at least a 12 inch compacted thickness and be made with the most clayey material on site. The final surface shall be mounded so that it will not pond any surface water. Potential rainfall runoff water upslope from the closed waste impoundment shall be diverted from the closure. Apply at least 4 inches of topsoil material, smooth and vegetate the area according to the vegetation plan.

POLLUTION CONTROL

Closure of the waste impoundment, land application of the dry waste or wastewater, and all construction activities are to be conducted in such a manner that all pollution is minimized. Best Management Practices (BMP) shall be utilized whenever possible.